The month afforded most favorable weather conditions for the growth of winter wheat. The continued moderately cool nights and excess in cloudiness caused a slow growth and good root development of the plant. Wheat is generally reported in excellent condition and affording abundant pasturage in many places to the stock. Plowing for oats is in progress, and some sowing has been done. The ground is mostly in good condition for the progress of work.—*C. M. Strong.*

Oregon.—The mean temperature was 40.5°, or 5.7 above normal; the highest was 78°, at Klamath Falls on the 3d, and the lowest, 2°, at Lonerock and Joseph on the 28th. The average precipitation was 5.05, or about 0.50 below normal; the greatest monthly amount, 17.75, occurred at Glenora; and the least, trace, at Burns.

The month was so open that quite a large amount of plowing and seeding was done on dry land. Altogether the grain prospects at the end of January have never been better, as, in general, it is well rooted and stooled, vigorous, and of good color.—*G. N. Salisbury.*

Pennsylvania.—The mean temperature was 29.8°, or 2.0° above normal; the highest was 63°, at Coatesville on the 23d, and the lowest, 8° below zero, at Smethport on the 29th and at Butler on the 31st. The average precipitation was 2.64, or 0.70 below normal; the greatest monthly amount, 4.37, occurred at Warren, and the least, 1.36, at Towanda.

Grain at the close of the month appeared to have wintered well, and its general condition was a fair average.—*T. F. Townsend.*

South Carolina.—The mean temperature was 44.0°, or 0.6 below normal; the highest was 75°, at Beaufort on the 8th and 23d, and the lowest, 3°, at Liberty on the 2d. The average precipitation was 2.43, or 1.61 below normal; the greatest monthly amount, 5.65, occurred at Georgetown, and the least, 1.58, at Statesburg.

Wheat and oats were not materially injured by the freezing weather at the opening of the month, and if injured by the freeze at the close of the month the damage was not apparent. Plowing was quite general during the month, in preparation for spring planting.—*J. W. Bauer.*

South Dakota.—The mean temperature was 23.7°, or about 11° above normal; the highest was 68°, at Chamberlain on the 19th, and the lowest, 25° below zero, at Howard and Ladelle on the 31st. The average precipitation was 0.11, or about 0.57 below normal; the greatest monthly amount, 0.66, occurred at Spearfish, while none fell at Cherry Creek, Howard, Mitchell, and Wentworth.—*S. W. Glenn.*

Tennessee.—The mean temperature was 39.3°, or about 2.0° above normal; the highest was 70°, at Springfield on the 16th, and the lowest, 10° below zero, at Erasmus on the 2d. The average precipitation was 2.91, or 2.07 below normal; the greatest monthly amount, 4.98, occurred at Iron City, and the least, 1.31, at Bluff City.

The only growing crop of special importance during January was winter wheat, which made encouraging progress, and the condition at the end of the month, as a rule, was above the average for this period.—*H. C. Bate.*

Texas.—The mean temperature, determined by comparison of 46 stations distributed throughout the State, was 1.5° above the normal; the highest was 86°, at Beeville on the 8th, and the lowest, 5°, at Anna on the 29th. The average precipitation, determined by comparison of 51 stations distributed throughout the State, was 0.58 above the normal. Nearly normal conditions prevailed along the immediate coast, over the panhandle, the extreme western portion of west Texas, and the northwestern portion of central Texas, while there was a deficiency ranging from about 1.00 to 3.34 over north and east Texas. Over the other portions of the State there was an excess, ranging from 1.00 to 3.79, with the greatest in the vicinity of San Antonio. The greatest monthly amount, 9.13, occurred at Alvin, and the least, trace, at Fort Ringgold.

The month of January was generally favorable for farming operations and much farm work was done. Vegetables along the coast were damaged some by frost and freezing weather at the close of the month, especially where unprotected. Wheat, rye, and oats are doing well and the weather was very favorable for these crops. The wheat crop is reported to be in fine condition generally.—*J. L. Cline.*

Utah.—The mean temperature was 31.6°, or 7.4° above normal; the highest was 70°, at Elgin on the 15th, and the lowest, 10° below zero, at Fort Duchesne on the 13th. The average precipitation was 0.43, or 0.73 below normal; the greatest monthly amount, 1.25, occurred at Fillmore, while none fell at Castledale. It was the warmest and driest January on record.—*L. H. Murdoch.*

Virginia.—The mean temperature was 36.6°, or slightly above normal; the highest was 76°, at Fontella on the 14th, and the lowest, 5° below zero, at Burkes Garden and Marion on the 4th. The average precipitation was 2.69, or 0.72 below normal; the greatest monthly amount, 5.08, occurred at Rocky Mount, and the least, 1.36, at Grahams Forge.

The progress of the crops throughout the month was satisfactory; winter wheat was generally reported as well rooted and making good growth.—*E. A. Evans.*

Washington.—The mean temperature was 38.3°, or 5.9° above normal; the highest was 71°, at Bridgeport on the 7th and 8th, and the lowest, 1° below zero, at Northport on the 27th. The average precipitation was 3.65, or 0.86 below normal; the greatest monthly amount, 18.18, occurred at Clearwater, and the least, 0.25, at Centerville and Ritzville.—*A. B. Wollaber.*

West Virginia.—The mean temperature was 34.5°, or 2.6° above normal; the highest was 74°, at Cairo on the 15th, 17th, and 22d, and the lowest, 10° below zero, at Oceana on the 1st. The average precipitation was 2.24, or 0.72 below normal; the greatest monthly amount, 3.60, occurred at Point Pleasant, and the least, 0.82, at Burlington.

Wheat and winter oats were reported as looking very well over the State, although complaint is made in some of the northern counties of the hessian fly. In the southern counties, during the mild spell, farmers commenced plowing for corn and oats.—*E. C. Vose.*

Wisconsin.—The mean temperature was 21.8°, or about 7.0° above normal; the highest was 57°, at Racine on the 5th, and the lowest, 26° below zero, at Medford on the 31st. The average precipitation was 0.97, or about 0.50 below normal; the greatest monthly amount, 2.50, occurred at Beloit, and the least, 0.18, at Heafford Junction.—*W. M. Wilson.*

Wyoming.—The mean temperature was 26.4°, or 4.3° above normal; the highest was 70°, at Cody on the 13th, and the lowest, 19° below zero, at Burns on the 1st. The average precipitation was 0.23, or about 0.45 below normal; the greatest monthly amount, 0.93, occurred at Bedford, while none fell at Lusk, Fort Laramie, and Wamsutter.—*W. S. Palmer.*

SPECIAL CONTRIBUTIONS.

RECENT PAPERS BEARING ON METEOROLOGY.

W. F. R. PHILLIPS, in charge of Library, etc.

The subjoined list of titles has been selected from the contents of the periodicals and serials recently received in the library of the Weather Bureau. The titles selected are of papers or other communications bearing on meteorology or cognate branches of science. This is not a complete index of the meteorological contents of all the journals from which it has been compiled; it shows only the articles that appear to the compiler likely to be of particular interest in connection with the work of the Weather Bureau:

Scientific American. New York. Vol. 82.
—— Recent Balloon Ascensions near Paris. P. 59.
Science. New York. N. S. Vol. 11.
Hilgard, E. W. Prevention of Hail. P. 153.
Aeronautical Journal. London. Vol. 4.
—— Valveless Balloon Voyage. P. 99.
B., H. A. Scientific Research in Aeronautical Problems. P. 101.
Spencer, P. Photography from Balloons. P. 103.
—— Dr. K. Danilewsky's Aerial Experiments. P. 98.
—— Forthcoming International Aeronautical Congress. P. 105.
—— Application of Wireless Telegraphy to Balloons. P. 108.
Geographische Zeitschrift. Leipzig. 6 *Jahrg.*
Halle, E. von. Die klimatische Verteilung der Industrie. P. 10.
Symon's Monthly Meteorological Magazine. London. Vol. 34.
—— Low Barometric Pressure on December 29, 1899 [England]. P. 177.
—— Severe Frost in December, 1899. P. 181.
Meteorologische Zeitschrift. Berlin. Band 16.
Trabert, W. Die Bekämpfung der Frostgefahr. P. 529.
Lesshaft, E. Der Einfluss der Wärmeschwankungen des Norwegischen Meers auf die Luftcirkulation in Europa. P. 539.
Hellmann, G. Zur täglichen Periode der Windgeschwindigkeit. P. 546.
Blasius, R. Wilhelm Blasius. P. 555.
Kremster, V. Klima von Hannover. P. 558.
Hegyfoky, J. Die Bewölkung in den Ländern der ungarischen Krone. P. 559.
Hergesell, H. Täglicher Gang der Windgeschwindigkeit zu Strassburg. P. 566.
Konrad, V. Ueber den Wassergehalt der Wolken. P. 566.
Richarz, F. Bemerkung über die Temperaturdifferenzen in auf- u. absteigenden Luftströmen. P. 567.
Hann, J. Temperaturmittel für Südafrika. P. 568.
Dufour, H. Versuche und Beobachtungen über das Gefrieren des Wassers. P. 569.
Gonzalez D. Resultate der meteorologischen Beobachtungen in der Republik Guatemala 1856 bis 1898. P. 570.

Zeitschrift für Luftschiffahrt. 18 *Jahrg.*

Assmann, R. Eine neue Form des "Ballon sonde." P. 281.

Tuma, Dr. Josef. Beiträge zur Kenntniss der atmosphärischen Elektricität. Luftelektricitätsmessung im Luftballon. P. 286.

Nimfuhr, Raimund. Flugtechnische Betrachtungen. P. 293.

Nature. London. Vol. 61.

——The Old and New Kinetic Theory. (Review of Meyer's "Kinetic Theory of Gases" and Burbury's "Treatise on the Kinetic Theory of Gases"). P. 289.

MacDowall, Alex. B. Compensation in Weather. P. 295.

Drygalski, E. v. German Antarctic Expedition. P. 318.

Webb, S. and Stokes, G. G. Effects of Lightning upon Electric Lamps. P. 343.

Ciel et Terre. Bruxelles. 20me Année.

Hildebrandsson, H. Recherches sur les centres d'action de l'atmosphère. II. P. 529.

Scientific American Supplement. New York. Vol. 49.

—— Kite Meteorograph Construction and Operation. (Condensed from "Kite Meteorograph Construction and Operation" by Prof. C. F. Marvin). P. 20166.

University of Tennessee Record. No. 11.

Fulton, Weston, M. An Electric Recording River Gage. P. 232.

National Geographic Magazine. Washington. Vol. 11.

Frankenfield, H. C. Kite Work of the Weather Bureau. P. 55.

Das Wetter. Berlin. 17 *Jahrg.*

Assmann, R. Die Sonnenstrahlung. P. 1.

Berson, A. Ein unveröffentlichter Brief des Cartesius, betreffend die Erfindung des Barometers. P. 8.

Journal of the Western Society of Engineers, Chicago. Vol. 4.

Stewart, C. B. Discharge Measurement of the Niagara River at Buffalo, N. Y. P. 450.

Gaea. Leipzig. 36 Jahrg.

Trabert, W. Die Bildung des Hagels. P. 162.

Scottish Geographical Journal. Edinburgh. Vol. 16.

Milne, A. D. Dry Summer on the Upper Nile. P. 89.

Appleton's Popular Science Monthly. New York. Vol. 56.

Cook, Orange. Ribbon Lightning. P. 587.

MEXICAN CLIMATOLOGICAL DATA.

Through the kind cooperation of Señor Manuel E. Pastrana, Director of the Central Meteorologico-Magnetic Observatory, the monthly summaries of Mexican data are now communicated in manuscript, in advance of their publication in the Boletin Mensual. An abstract, translated into English measures, is here given, in continuation of the similar tables published in the MONTHLY WEATHER REVIEW since 1896. The barometric means have not been reduced to standard gravity, but this correction will be given at some future date when the pressures are published on our Chart IV.

Mexican data for January, 1899.

Stations.	Altitude.	Mean barometer.	Temperature.			Relative humidity.	Precipitation.	Prevailing direction.	
			Max.	Min.	Mean.			Wind.	Cloud.
	Feet.	*Inch.*	° *F.*	° *F.*	° *F.*	%	*Inch.*		
Culiacán Rosales (E. d. S.)	112	29.53	86.7	52 2	70.9	60	.....	ne.	ne.
Durango (Seminario)	6,243	24.04	79.7	27.7	53.8	49	.....	.....	sw.
Leon (Guanajuato)	5,931	24.30	76.3	32.4	56.3	58	0.06	n.	w.
Mazatlan	25	29.96	78.1	59.9	71.4	72	0.00	nw.	w.
Mexico (Obs. Cent.)	7,472	23.05	72.5	37.4	55.4	55	0.02	n.	w.
Morelia (Seminario)	6,401	23.98	76.8	41.0	58.1	63	0.09	sw.	w.
Puebla (Col. Cat.)	7,112	23.37	76.6	35.2	58.1	65	.....	ene.	sw.
Saltillo (Col. S. Juan)	5,399	24.78	69.4	32.5	50.0	68	2.29	s.	sw.
San Isidro (Hac. de Guanajuato)	.....	.....	68.9	50.9	.....	.....	T.	w.	.....
Silao	6,068	24.29	72.5	40.8	59.2	52	0.01	nw.	w.
Zacatecas	8,015	22.52	71.6	28.4	50.2	52	.....	e.	.....
Zapotlan	5,078	25.11	77.4	39.7	61.0	55	T.	se.	w.

CONTRIBUTIONS TO THE METEOROLOGY OF PANAMA.

By Gen. HENRY L. ABBOTT, dated Paris, February 8, 1900.

I send herewith in Table 1 the hourly temperatures and barometric pressures at Alhajuela on the Upper Chagres, as observed by the officers of the new Panama Canal Company, during October, November, and December, 1899. In Table 2 I give the hourly temperatures during the last six months of the year 1899 at La Boca, the new landing place of the Panama railroad, near Panama. These observations, with those already sent you for July, August, and September, 1899, (see MONTHLY WEATHER REVIEW, October, 1899, p. 463), as compared with similar data at Colon obtained by your own observer (see MONTHLY WEATHER REVIEW, May, 1899, pp. 201–3) give a very interesting and complete knowledge of this extraordinary climate. At Alhajuela the extreme range of the barometer was only about three-tenths of an inch in these six months, and the extreme range of the thermometer was only 30.5° Fahrenheit.

TABLE 1.

1899.	Temperatures.						Barometric pressures.					
	October.		November.		December.		October.		November.		December.	
	° *C.*	° *F.*	° *C.*	° *F.*	° *C.*	° *F.*	*Mm.*	*Ins.*	*Mm.*	*Ins.*	*Mm.*	*Ins.*
1 a.m.	23.8	74.9	24.4	75.9	23.3	73.9	760.5	29.94	759.5	29.90	760.0	29.92
2 a.m.	23.6	74.5	24.2	75.6	23.0	73.4	760.2	29.93	759.2	29.89	759.6	29.91
3 a.m.	23.4	74.1	24.1	75.3	22.8	73.0	760.0	29.92	759.1	29.88	759.5	29.90
4 a.m.	23.2	73.8	23.9	75.0	22.6	72.7	760.1	29.93	759.2	29.89	759.6	29.91
5 a.m.	23.1	73.5	23.8	74.9	22.4	72.4	760.4	29.94	759.4	29.90	759.8	29.91
6 a.m.	23.0	73.3	23.8	74.8	22.2	72.0	760.7	29.95	759.7	29.91	760.1	29.93
7 a.m.	23.8	74.8	24.5	76.1	22.5	72.5	761.0	29.96	760.1	29.92	760.5	29.94
8 a.m.	25.8	78.5	26.2	79.1	24.9	76.8	761.3	29.97	760.4	29.94	760.8	29.95
9 a.m.	28.2	82.8	28.0	82.4	28.0	82.4	761.6	29.98	760.6	29.94	760.9	29.96
10 a.m.	29.2	84.6	29.1	84.4	29.4	84.8	761.4	29.98	760.5	29.94	760.9	29.96
11 a.m.	30.2	86.2	29.8	85.6	30.2	86.3	761.0	29.96	760.0	29.92	760.5	29.94
Noon	30.2	86.3	30.1	86.3	30.5	87.0	760.6	29.94	759.4	29.90	759.9	29.92
1 p.m.	29.5	85.1	30.2	86.5	30.6	87.1	760.1	29.93	758.8	29.88	759.4	29.90
2 p.m.	29.1	84.3	29.9	85.8	30.4	86.8	759.7	29.91	758.4	29.86	759.0	29.88
3 p.m.	28.4	83.2	29.1	84.4	30.3	86.5	759.4	29.90	758.3	29.85	758.8	29.88
4 p.m.	27.6	81.8	28.2	82.8	29.7	85.4	759.4	29.90	758.4	29.86	758.9	29.88
5 p.m.	26.8	80.3	27.4	81.4	28.5	83.2	759.6	29.90	758.7	29.87	759.1	29.89
6 p.m.	26.2	79.2	26.6	79.9	27.0	80.6	759.9	29.92	759.0	29.88	759.5	29.90
7 p.m.	25.7	78.3	26.0	78.8	26.1	79.0	760.4	29.94	759.4	29.90	760.0	29.92
8 p.m.	25.3	77.5	25.6	78.1	25.2	77.4	760.8	29.95	759.8	29.92	760.4	29.94
9 p.m.	24.9	76.9	25.3	77.5	24.8	76.7	761.1	29.96	760.2	29.93	760.6	29.95
10 p.m.	24.6	76.3	25.0	77.0	24.3	75.7	761.2	29.97	760.3	29.93	760.7	29.95
11 p.m.	24.3	75.8	24.8	76.6	23.9	75.1	761.2	29.97	760.1	29.93	760.6	29.94
Midnight	24.1	75.4	24.5	76.2	23.6	74.5	760.9	29.96	759.8	29.92	760.2	29.93
Means	26.0	78.8	26.4	79.6	26.1	79.0	760.5	29.94	759.5	29.90	760.0	29.92
Maxima	34.4	93.9	33.0	91.4	33.0	91.4	763.0	30.04	763.1	30.04	763.5	30.06
Minima	21.9	71.4	22.5	72.5	18.9	66.0	757.8	29.84	756.0	29.76	757.0	29.80

NOTE.—The original temperatures and pressures were given to the hundredths, and the conversions agree therewith.

Reduction of observations made at Boca, near Panama, by the self-registering thermometer of M. Royer. Every day of these months is represented in these figures except six days in July.

TABLE 2.

Hours.	Temperatures.													
	July.		August.		September.		October.		November.		December.		Means.	
	° C.	° F.	° C.	° F.	° C.	° F.	° C.	° F.	° C.	° F.	° C.	° F.	° C.	° F.
1a.m.	24.3	75.8	22.6	72.8	23.5	74.2	23.6	74.6	23.7	74.7	23.8	74.8	23.6	74.5
2 a.m.	24.1	75.3	22.4	72.3	23.2	73.8	23.3	73.9	23.5	74.2	23.3	74.0	23.3	73.9
3 a.m.	23.8	74.9	22.2	71.9	23.0	73.4	23.0	73.4	23.2	73.8	23.0	73.4	23.0	73.5
4 a.m.	23.6	74.6	22.0	71.5	22.8	73.0	22.7	72.9	23.0	73.4	22.6	72.7	22.8	73.0
5 a.m.	23.5	74.2	21.8	71.2	22.6	72.7	22.6	72.6	22.8	73.1	22.4	72.3	22.6	72.7
6 a.m.	23.3	73.9	21.6	71.0	22.5	72.4	22.4	72.3	22.6	72.8	22.1	71.8	22.4	72.4
7 a.m.	23.4	74.2	21.5	70.8	22.4	72.2	22.2	72.0	22.4	72.4	21.9	71.4	22.3	72.2
8 a.m.	24.3	75.7	21.7	71.1	22.9	73.2	22.4	72.3	22.6	72.7	21.9	71.4	22.6	72.7
9 a.m.	25.5	77.9	22.7	72.9	24.1	75.3	23.7	74.6	23.4	74.2	23.1	73.6	23.8	74.8
10 a.m.	26.8	80.3	24.1	75.3	25.2	77.4	24.6	76.3	24.6	76.4	24.8	76.6	25.0	77.0
11 a.m.	27.9	82.3	25.4	77.6	26.4	79.6	25.6	78.1	25.7	78.2	26.3	79.3	26.2	79.2
Noon.	28.6	83.5	26.2	79.2	27.4	81.2	26.4	79.5	26.4	79.6	27.4	81.3	27.1	80.7
1 p.m.	29.2	84.5	26.7	80.0	27.9	82.3	27.1	80.8	27.1	80.8	28.3	82.9	27.7	81.9
2 p.m.	29.3	84.8	26.8	80.2	28.2	82.8	27.4	81.4	27.6	81.7	28.8	83.9	28.0	82.4
3 p.m.	29.0	84.3	26.4	79.6	28.0	82.4	27.2	81.0	27.7	81.9	29.0	84.2	27.9	82.2
4 p.m.	28.7	83.7	26.0	78.8	27.6	81.7	26.9	80.4	27.6	81.7	29.0	84.3	27.6	81.8
5 p.m.	28.3	82.9	25.7	78.3	27.0	80.6	26.6	79.8	27.2	81.0	29.0	84.3	27.3	81.2
6 p.m.	27.5	81.5	25.3	77.5	26.5	79.8	26.2	79.2	26.7	80.0	28.7	83.7	26.8	80.3
7 p.m.	26.8	80.3	24.9	76.8	25.9	78.7	25.7	78.3	26.1	78.9	28.0	82.4	26.2	79.2
8 p.m.	26.2	79.0	24.4	76.0	25.4	77.7	25.3	77.5	25.6	78.1	27.2	81.0	25.7	78.2
9 p.m.	25.5	78.0	24.0	75.2	24.9	76.8	24.9	76.9	25.2	77.3	26.4	79.5	25.2	77.8
10 p.m.	25.1	77.2	23.6	74.5	24.5	76.0	24.6	76.3	24.8	76.6	25.5	78.0	24.7	76.4
11 p.m.	24.8	76.6	23.3	73.9	24.1	75.4	24.2	75.6	24.4	76.0	25.0	76.9	24.3	75.7
Midnight.	24.5	76.0	23.0	73.3	23.8	74.9	23.9	75.0	24.1	75.3	24.3	75.7	23.9	75.0
Means.	26.0	78.7	23.9	75.1	25.0	77.0	24.7	76.4	24.9	76.9	25.5	77.9	25.0	77.1
Maxima.	32.9	91.2	30.9	87.6	32.5	90.5	30.1	86.2	31.2	88.2	31.4	88.5	31.5	88.7
Minima.	20.9	69.6	20.0	68.0	20.6	69.1	21.0	69.8	20.6	69.1	20.1	68.2	20.5	69.0